New Hampshire Diabetes Data 2005

New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Prevention Services
Diabetes Education Program

New Hampshire Diabetes Data 2005

John T. Lynch, Governor

John A. Stephen, Commissioner
Department of Health and Human Services

Mary Ann Cooney, Director
Division of Public Health Services

Prepared By:
Ludmila Anderson MD, MPH
New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Prevention Services
Diabetes Education Program
June 2006

For additional information on New Hampshire Diabetes Data, 2005:
NH Diabetes Education Program
29 Hazen Drive, Concord, New Hampshire 03301-6504
Phone: 603-271-5173 or 1-800-852-3345 ext. 5173
TDD Access: 1-800-735-2964
Internet: http://www.dhhs.state.nh.us/DHHS/CDPC/dep.htm

TABLE OF CONTENTS

INTRODUCTION

Diabetes is one of the leading causes of disability and death in the United States. It is a leading cause of blindness, end-stage renal disease, and lower limb amputation (1). Heart disease and stroke are two to four times more common in persons with diabetes and account for two-thirds of deaths among persons with diabetes (1). It is estimated that the national health care costs for diabetes are approximately $100 billion dollars a year (1). Diabetes is the 6th leading cause of death in the United States. The prevalence of diagnosed diabetes among adults in the United States increased by 49% between 1990 and 2000 (1). The prevalence of diabetes is expected to increase in the future.

It is well recognized that close attention to blood glucose levels combined with monitoring of clinical indicators can lead to earlier interventions and significant reductions in rates of complications. This data book provides information on these indicators.

This publication is the fifth annual compilation of data on diabetes from the New Hampshire Department of Health and Human Services. The data can be used for multiple purposes: 1) to document the magnitude of the public health problem; 2) to monitor disease trends over time; 3) to detect changes in health care practices; 4) to evaluate control strategies; and, 5) to facilitate planning.

DATA HIGHLIGHTS

- Approximately 6.5% of the adult population of New Hampshire had been diagnosed with diabetes as of 2004.
    - The prevalence of diabetes increased with increasing age going from 2.6% among persons 18-24 years of age to 17.2% among persons ≥65 years old.
- Modifiable risk factors for diabetes include overweight and physical inactivity.
    - 57.7% of adults in New Hampshire were overweight in 2004.
    - 18.5% of adults in New Hampshire reported no leisure-time physical activity during the previous month in 2004.
- 64% of adults with diabetes in New Hampshire had received an influenza immunization in the past year in 2004.
- 56% of adults with diabetes in New Hampshire had ever been immunized against pneumococcal pneumonia in 2004.
- 76% of adults with diabetes in New Hampshire had a dilated eye examination in the past year in 2004.
- 78% of adults with diabetes in the state had a foot exam in the past year in 2004.
- 95% of adults with diabetes in New Hampshire reported they had a glycosylated hemoglobin measurement in the past year in 2004.
- 59% of adults with diabetes in New Hampshire had hypertension in 2003.
- 55% of adults with diabetes in New Hampshire had elevated cholesterol in 2003.
- 18% of adults with diabetes in New Hampshire were smokers in 2004.
- There were 15,948 hospitalizations in the state among persons with diabetes in 2003; and 16,505 in 2004.
- There were 250 lower extremity amputations among persons with diabetes in New Hampshire in 2003; and 244 in 2004.
- 106 persons with diabetes in the state developed end stage renal disease in 2003.
- There were 963 deaths in New Hampshire in 2001 in which diabetes was the primary or contributing cause.

NEW FEATURES IN THIS REPORT

- Clinical prevention practices for adults with diabetes are presented for 15 sites (at 22 locations) that underwent chart audits (this includes 3 sites recently added to the program).
- Data presented on end stage renal disease are based on the 2005 Incidence Report. The graph depicts incidence rates as opposed to case counts portrayed in the prior data book.
- Information on the collection of minority health data from the New Hampshire REACH 2010 survey is included. This survey used questions from the national Behavioral Risk Factor Surveillance System (BRFSS) for an oversampling of individuals who inhabit a region of the state known to have greater cultural diversity. Information on diabetes risks and care among Latinos and individuals of African descent is presented.
- Data presented on diabetes related mortality remain the same as presented in the prior data book.

FREQUENTLY ASKED QUESTIONS

What are the Centers for Disease Control and Prevention?

The Centers for Disease Control and Prevention (CDC) are part of the United States Department of Health and Human Services. CDC is considered the nation's prevention agency; it focuses on public health measures to prevent disease, disability, and death. The national diabetes control program, which is part of CDC, provides funds and guidance to states for their diabetes control efforts.

What is a confidence interval?

A confidence interval is an estimated range of values for a particular characteristic of a population. The width of the confidence interval provides an indication of how uncertain the value is. Small sample sizes often have wide confidence intervals; larger samples have narrower confidence intervals. Read more about confidence intervals in the Methods Section.

Why are data not presented by race or ethnicity?

Based on the 2000 United States Census, New Hampshire's population is approximately 96.0% white, 1.3% Asian, 0.7% African American, 0.2% American Indian, and 1.7% persons reporting other races. About 1.7% of the population is of Hispanic or Latino origin. Because no single racial or ethnic minority group exceeds 1.7% of the total population, the number of diabetes-related events in these groups is too small to allow meaningful analysis. As the state's demographics change and as data collection techniques improve, it may be possible to present more complete data on racial and ethnic minorities in the future.

I would like to see data for my town, but cannot find this information in the report. Why doesn't this report show town-level data?

New Hampshire has a relatively small population of 1.3 million people divided among 234 cities and towns. In a given year, the number of illnesses or deaths related to diabetes is too small to generate meaningful results on a town level.

Some of the information in the report is identified as "age-adjusted". What does this mean and why is it done?

To compare populations where the number of people in each age group is different, an adjustment needs to be made. For example, diabetes is more common among the elderly. Since New Hampshire has proportionally more older people than the United States in general, the rate of diabetes in New Hampshire might appear higher than that of the United States. By age-adjusting the data using the 2000 standard United States population, the rates can be compared without concern about differences in the age distribution of the two populations.

METHODS

The format for this report is based on the components of the diabetes surveillance system for New Hampshire. The system was developed in 2000 and consists of 13 measures:

1. Diabetes prevalence
2. Overweight
3. Physical inactivity
4. Influenza immunization
5. Pneumococcal immunization
6. Dilated eye examination
7. Foot examination
8. Glycosylated hemoglobin measurement
9. Diabetes hospitalization
10. Lower extremity amputation
11. End stage renal disease
12. Diabetes mortality
13. Diabetic ketoacidosis mortality

New Hampshire's diabetes surveillance measures were selected based on the recommendations of national organizations. Measures #1-7 and 9-13 are from *Indicators for Chronic Disease Surveillance*, which was developed jointly by the Council of State and Territorial Epidemiologists, the Association of State and Territorial Chronic Disease Program Directors, and the Centers for Disease Control and Prevention (CDC) (2,3). Measures #4-8 are also national evaluation objectives from the Division of Diabetes Translation at CDC. Measures #6 and 8 are Health Plan Employer Data and Information Set (HEDIS) measures developed by the National Committee for Quality Assurance.

The source of data on measures #1-8 is the Behavioral Risk Factor Surveillance System (BRFSS). Measures #9-10 are from hospital discharge data. Measure #11 is from the US Renal Data System. Measures #12-13 are from death certificates.

Where appropriate, diabetes-related objectives from *Healthy People 2010* or *Healthy New Hampshire 2010* are given to put current data from New Hampshire in perspective (4,5). *Healthy People 2010* is a set of national health targets for the next decade. *Healthy New Hampshire 2010* is a set of state-specific health targets.

Information on diabetes in this report does not differentiate between type I and type II disease for two reasons: 1) type II disease accounts for approximately 95% of all cases of diabetes; and 2) most of the data sets currently available for diabetes do not specify type I or type II.

In some tables, both crude rates and age-adjusted rates are presented. The crude rate is calculated by dividing the number of events by the state's population and then multiplying by 100,000. Because the events of interest (hospitalizations, amputations, and deaths) are more common as a person ages, the crude rate can be affected by the number of people in each grouping of the population. To control for the effect of age, the age-adjusted rate was calculated using the 2000 United States standard population. The adjusted rate allows for more meaningful analysis when comparing data between states or when looking at trends in a single state over time.

In most cases, 95% confidence intervals (95% CI) are presented when data are obtained from surveys. Because surveys involve a sample of the population, each estimate has a margin of error. The confidence interval reflects the degree of uncertainty for each estimate. For example, 63.9% of persons with diabetes in New Hampshire reported having received an influenza immunization during the past year. The 95% confidence interval was 58.3%-69.4%. This can be interpreted to mean that our best estimate is that 63.9% of persons with diabetes in the state have been immunized for influenza in the past year, but the range that is likely to capture the true value 95% of the time could be as low as 58.3% or as high as 69.4%. In other words, the estimate from the survey has a margin of error of $\pm$ 5.6%.

DATA SOURCES

Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is a population-based, random-digit dialed telephone survey of civilian, non-institutionalized adults, aged 18 years and older. The survey is coordinated by the Centers for Disease Control and Prevention (CDC) and is conducted annually by all states. In New Hampshire, the Health Statistics and Data Management Section in the Department of Health and Human Services is responsible for the survey. The BRFSS includes questions on health behavior risk factors such as safety belt use, diet, weight control, diabetes, alcohol use, physical exercise, and preventive health screenings. The data are weighted to more accurately reflect the population by accounting for age, gender, and probability of selection. A core set of questions, which includes diabetes prevalence, is asked annually. Additional questions on diabetes are asked in an optional module. (BRFSS questions for which data are presented in this report are shown beginning on page 44.) In New Hampshire, 5,065 interviews were completed in 2004. Women reporting gestational diabetes were considered not to have diabetes when BRFSS data were analyzed for this report. Missing, don't know/not sure, and refused responses were excluded from analysis. The national estimates provided are not calculated by pooling all BRFSS data as a sample of the nation as a whole, but are simply a calculation of the middle value of all the state estimates (the median). This method gives equal weight to smaller states and bigger states and cannot be relied upon to approximate a national sample. New Hampshire and national data can be accessed on line at: http://www.cdc.gov/brfss/.

Healthy People 2010

Healthy People 2010 is a set of national health targets for the next decade. It builds on initiatives pursued over the past two decades including the 1979 Surgeon General's Report, *Healthy People*, and *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* It is designed to achieve two overarching goals: 1) increase quality and years of healthy life; and 2) eliminate health disparities. A copy of Healthy People 2010 can be obtained on-line at: http://www.health.gov/healthypeople/.

Healthy New Hampshire 2010

Healthy New Hampshire 2010 is New Hampshire's health promotion and disease prevention agenda for the first decade of the 21st century. Similar to *Healthy People 2010,* it is a compilation of health objectives. A copy of Healthy New Hampshire 2010 can be obtained on-line at: http://www.healthynh2010.org/ .

Hospital Discharge Data

Hospital discharge data is maintained by the New Hampshire Hospital Association under contract with the Department of Health and Human Services. The 26 acute-care, non-federal, inpatient facilities in the state report all admissions to this data set. The data set includes information on New Hampshire residents hospitalized in the state; New Hampshire residents hospitalized in another state are not included. The Health Statistics and Data Management Section oversees the analysis of this data set. Additional information about New Hampshire hospital discharge data is available on-line at: http://www.dhhs.nh.gov/DHHS/HSDM/hospital-discharge-data.htm.

United States Renal Data System

The United States Renal Data System is a national data system which collects, analyzes, and distributes information about end-stage renal disease in the United States. The system is funded by the National Institutes of Health and the Centers for Medicare and Medicaid Services. Additional information is available on-line at: www.usrds.org.

Vital Statistics

New Hampshire law requires that reports of all birth, death, fetal death, marriage, and divorce be filed with the State Registrar in the Division of Vital Records Administration of the Department of State. The Health Statistics and Data Management Section in the Department of Health and Human Services analyzes these data. Depending on the event, filings are made by hospital personnel, physicians, funeral directors, city/town clerks, attorneys, and clerks of the courts. Reports of New Hampshire resident births and deaths in other states, and Canada, are provided to the State Registrar, for statistical purposes only, under an inter-state/Canadian agreement for the exchange of vital events information.

For death certificates, the cause of death reported is the underlying cause of death. In a death record, the underlying cause of death is the specific disease, condition, or injury that initiated the chain of events leading to death. The underlying cause of death is not always the same as the immediate cause of death. For example, if a person was hospitalized for diabetes, but developed pneumonia and died while in the hospital, the underlying cause of death would be diabetes. Additional information on deaths in New Hampshire is available at: http://www.dhhs.nh.gov/DHHS/HSDM/death-data.htm.

Diabetes Clinic Sites

The state's Diabetes Education Program provides grant funds to the Community Health Access Network (CHAN) to improve diabetes care at clinic sites throughout the state. The clinic sites are a mixture of community health centers and primary care office practices. Chart audits were conducted in 15 clinic sites to assess provision of clinical preventive services to adults with diabetes during calendar year 2005.

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

Figure 1. Prevalence of diabetes among adults by year – New Hampshire and United States, 1994-2004

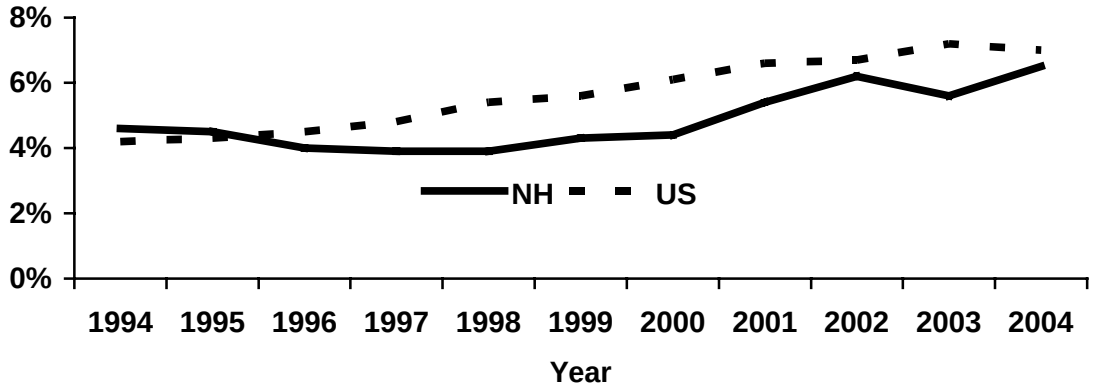


Table 1. Prevalence of diabetes among adults by year – NH and US, 1994-2004

	1994 (%)	1995 (%)	1996 (%)	1997 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	2002 (%)	2003 (%)	2004 (%)
NH	4.6	4.5	4.0	3.9	3.9	4.3	4.4	5.4	6.2	5.6	6.5
95% CI	3.4-5.8	3.3-5.7	3.0-5.0	2.9-4.9	2.7-5.1	3.1-5.4	3.4-5.3	4.6-6.1	5.4-6.9	5.0-6.3	5.8-7.2
US	4.2	4.3	4.5	4.8	5.4	5.6	6.1	6.6	6.7	7.2	7.0

Comment: The prevalence of diabetes among adults in New Hampshire in 2004 was 6.5% (95% Confidence Interval 5.8%-7.2%). Caution is advised when interpreting data for the past four years. Based on the confidence intervals, the change over the years is not statistically significant.

Methods: The numerator included respondents who reported having been diagnosed with diabetes by a doctor except those (1.1%) with gestational diabetes. The denominator included all respondents except those with missing, don't know, or refused answers. National data are median values, while New Hampshire data are means. National data includes all 50 states. The District of Columbia and Puerto Rico were included beginning in 1996.

Healthy People 2010: The national *Healthy People 2010* objective (#5-3) is to reduce the overall rate of diabetes that is clinically diagnosed to 2.5%.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Table 2. Prevalence of diabetes by demographic group – New Hampshire, 2004

Demographic Group	Percent	95% Confidence Interval
Age Group (years)		
18-24	2.6	0.4-4.8
25-34	0.7	0.1-1.4
35-44	2.2	1.2-3.1
45-54	6.0	4.5-7.5
55-64	12.3	9.8-14.8
65+	17.2	14.6-19.8
Gender		
Male	6.8	5.7-7.9
Female	6.2	5.3-7.2
Income		
<$15,000	16.2	11.7-20.6
$15,000-24,999	8.6	6.3-10.8
$25,000-34,999	7.6	5.2-10.1
$35,000-49,999	7.0	5.0-8.9
$50,000+	3.6	2.8-4.4
Education (years)		
<12	10.2	6.9-13.5
12	8.1	6.6-9.7
13-15	6.7	5.2-8.2
16+	4.4	3.5-5.4
Total	6.5	5.8-7.2

Comment: The prevalence of diabetes increases with increasing age. There was no significant difference in diabetes prevalence between males and females. The prevalence of diabetes was higher in persons with lower incomes and less education.

Methods: For each demographic group, the numerator included respondents who reported having been diagnosed with diabetes by a doctor. Women reporting gestational diabetes were considered not to have diabetes for the purpose of this analysis. Each denominator included all respondents in that demographic group except those with missing, don't know, or refused answers.

Healthy People 2010: The national *Healthy People 2010* objective (#5-3) is to reduce the overall rate of diabetes that is clinically diagnosed to 2.5%.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 2. Prevalence of overweight and obesity among adults by year – New Hampshire and United States, 1994-2004

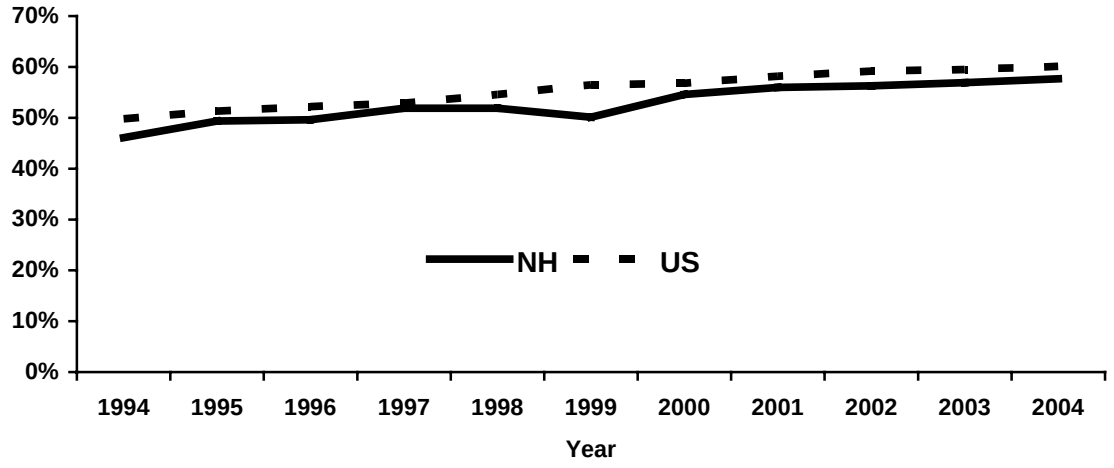


Table 3. Prevalence of overweight and obesity among adults by year – New Hampshire and United States, 1994-2004

	1994 (%)	1995 (%)	1996 (%)	1997 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	2002 (%)	2003 (%)	2004 (%)
NH	46.1	49.3	49.6	52.0	51.9	50.1	54.6	56.0	56.3	56.9	57.7
95% CI	43.3-48.9	46.4-52.3	46.5-52.6	49.0-54.9	49.0-54.8	46.8-53.4	51.9-57.3	54.2-57.7	54.7-57.9	55.3-58.6	56.0-59.4
US	49.8	51.3	52.2	52.9	54.6	56.5	56.8	58.2	59.2	59.5	60.1

Comment: Being overweight is a risk factor for diabetes. The prevalence of overweight and obesity among New Hampshire adults increased from 46.1% in 1994 to 57.7% in 2004.

Methods: Overweight is defined as a Body Mass Index (BMI) $\geq$25.0. This definition includes both persons who are overweight (25.0$\leq$ BMI <30.0) and persons who are obese (BMI $\geq$30.0). BMI is calculated by dividing a person's weight in kilograms by their height in meters squared.

Healthy People 2010: The *Healthy People 2010* objective (#19-2) is to reduce the proportion of adults who are obese (BMI$\geq$30) to 15% or less. In 2004, 21.6% of adults in New Hampshire were obese.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to reduce the prevalence of overweight (BMI$\geq$25.0) to 40%.

Data Source: Behavioral Risk Factor Surveillance System (6).

Table 4. Prevalence of overweight and obesity among adults by demographic group – New Hampshire, 2004

Demographic Group	Normal Weight	Percent Overweight	95% CI	Percent Obese	95% CI
Age Group (years)					
18-24	62.5	26.5	20.4-32.6	11.0	6.5-15.5
25-34	45.7	34.5	30.3-38.7	19.8	16.1-23.5
35-44	40.3	36.2	32.9-39.5	23.6	20.7-26.5
45-54	37.3	37.1	34.0-40.2	25.2	22.3-28.1
55-64	33.2	39.8	36.1-43.5	26.9	23.6-30.2
65+	40.2	40.6	37.2-44.0	19.2	16.4-22.0
Gender					
Male	31.6	44.7	42.2-47.2	23.6	21.5-25.7
Female	53.1	27.5	25.6-29.4	19.5	17.8-21.2
Income					
<$15,000	43.1	28.7	23.2-34.2	28.2	22.5-33.9
$15,000-24,999	48.6	32.7	28.2-37.2	18.8	15.2-22.4
$25,000-34,999	41.0	35.6	30.4-40.8	23.4	18.5-28.3
$35,000-49,999	39.7	37.1	33.0-41.2	23.2	19.7-26.7
$50,000+	39.8	38.6	36.2-41.0	21.6	19.6-23.6
Education (years)					
<12	44.9	27.1	21.5-32.7	28.1	22.2-34.0
12	39.7	35.8	32.8-38.8	24.5	21.9-27.1
13-15	39.8	36.8	33.6-40.0	23.4	20.5-26.3
16+	45.4	37.8	35.3-40.3	16.8	14.9-18.7
Total	42.3	36.1	34.5-37.7	21.6	20.2-23.0

Comment: Being overweight is a risk factor for diabetes. The prevalence of overweight and obesity among New Hampshire adults was higher in persons older than 25 years of age and males. There were no significant differences in overweight by income. Persons with a college degree were less likely to be overweight and obese than those with less education.

Methods: Overweight is defined as a Body Mass Index (BMI) 25.0-29.9. Obesity is defined as BMI $\geq$ 30. BMI is calculated by dividing a person's weight in kilograms by their height in meters squared.

Healthy People 2010: The *Healthy People 2010* objective (#19-2) is to reduce the proportion of adults who are obese (BMI$\geq$30) to 15% or less. In 2004, 21.6% of adults in New Hampshire were obese.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to reduce the prevalence of overweight (BMI$\geq$25) to 40%.

Data Source: Behavioral Risk Factor Surveillance System (6).

Table 5. Adults with no leisure-time physical activity by demographic group – New Hampshire, 2004

Demographic Group	Percent	95% Confidence Interval
Age Group (years)		
18-24	10.4	6.3-14.4
25-34	13.0	10.1-15.9
35-44	15.9	13.4-18.3
45-54	17.7	15.3-20.1
55-64	22.2	19.2-25.3
65+	31.7	28.5-34.8
Gender		
Male	16.7	15.0-18.5
Female	20.1	18.4-21.7
Income		
<$15,000	34.5	28.9-40.1
$15,000-24,999	27.4	23.2-31.6
$25,000-34,999	20.6	16.5-24.8
$35,000-49,999	18.7	15.6-21.8
$50,000+	11.8	10.3-13.3
Education (years)		
<12	33.0	27.2-38.8
12	25.1	22.6-27.6
13-15	18.1	15.7-20.5
16+	10.6	9.0-12.1
Total	18.5	17.3-19.7

Comment: Lack of physical activity is a risk factor for diabetes. Physical inactivity was more common among the elderly and those with lower incomes and less education.

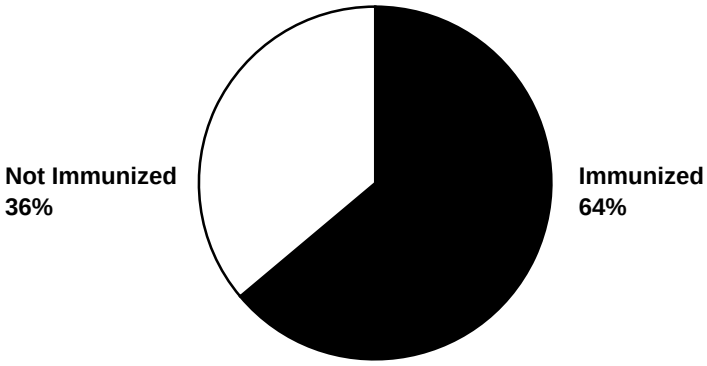
Methods: Lack of leisure-time physical activity was defined as no leisure time physical activity during the past month.

Healthy People 2010: The national *Healthy People 2010* objective (#22-1) is to decrease the percentage of adults with no leisure-time physical activity to 20%.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to increase to 50% the proportion of persons who engage in physical activity for thirty minutes or more five or more times a week.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 3. Influenza Immunization among Persons with Diabetes – New Hampshire, 2004



Comment: It is recommended that all persons with diabetes receive an annual influenza immunization. Data from 2004 indicated that 63.9% (95% Confidence Interval 58.3%-69.4%) of all adults with diabetes in New Hampshire had been immunized against influenza during the previous year. About 54.5% of persons with diabetes who are 18-64 years of age and about 76.1% of persons ≥ 65 years of age received an annual influenza immunization in past twelve months. Nationwide, 56.8% of adults with diabetes reported having received an influenza vaccination in the past year in 2004 (7).

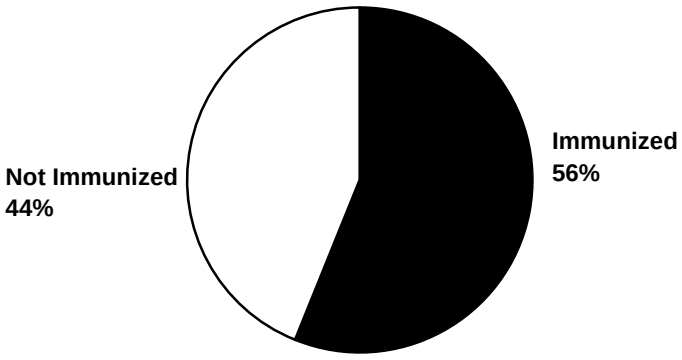
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who had received an influenza immunization during the past year. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=378).

Healthy People 2010: The national *Healthy People 2010* objective (#14-29) is to immunize 90% of persons with diabetes who are institutionalized or ≥65 years of age and 60% of persons with diabetes who are 18-64 years of age.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to immunize 80% of independently living adults age 50 or over. The NH objective has not been set for influenza immunization.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 4. Pneumococcal Immunization among Persons with Diabetes – New Hampshire, 2004



Comment: It is recommended that all persons with diabetes receive a pneumococcal immunization at least once. Data from 2004 indicated that 55.7% (95% Confidence Interval 49.8%-61.6%) of adults with diabetes in New Hampshire had been immunized against pneumococcal disease. About 41.5% of persons with diabetes who are 18-64 years of age and 75.0% of persons ≥ 65 years of age have ever received pneumococcal immunization. Nationwide, 50.3% of adults with diabetes reported ever receiving a pneumococcal immunization in 2004 (7).

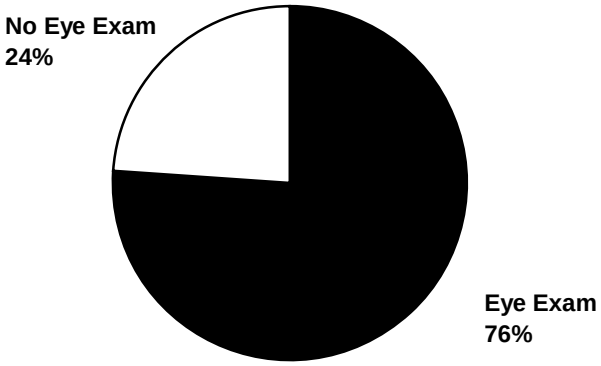
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who had ever received a pneumococcal immunization. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=361).

Healthy People 2010: The national *Healthy People 2010* objective (#14-29) is to immunize 90% of persons with diabetes who are institutionalized or ≥65 years of age and 60% of persons with diabetes who are 18-64 years of age.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to immunize 90% of independently living adults age 65 or over. The NH objective has not been set for pneumococcal immunization.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 5. Dilated Eye Examinations among Persons with Diabetes – New Hampshire, 2004



Comment: It is recommended that all persons with diabetes receive an annual dilated eye examination. Data from 2004 indicated that 76.3% (95% Confidence Interval 71.1%-81.5%) of adults with diabetes in New Hampshire had a dilated eye examination during the previous 12 months. Nationwide, 68.6% of adults with diabetes reported receiving a dilated eye examination in the past year in 2004 (7).

Based on 2004 data, 22.0% (95% confidence interval 17.2%-26.8%) of adults with diabetes in New Hampshire have been told by a doctor that diabetes has affected their eyes or they have retinopathy.

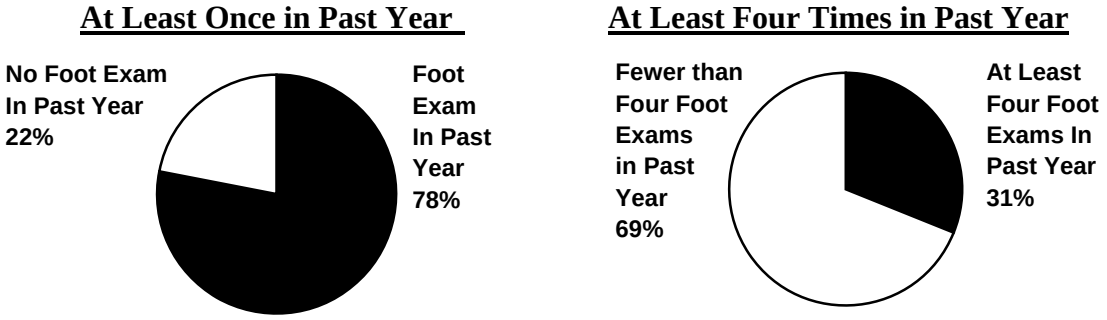
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who had received a dilated eye examination during the past year. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers.

Healthy People 2010: The national *Healthy People 2010* objective (#5-13) is to increase to 75% the proportion of adults with diabetes who have an annual dilated eye examination.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to increase to 80% the percentage of adults with diabetes who report having a dilated eye exam in the last 12 months.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 6. Foot Examinations among Persons with Diabetes – New Hampshire, 2004



Comment: Annual Foot Examination -- In 2004, 77.9% of adults (95% Confidence Interval 72.9%-82.9%) with diabetes in New Hampshire reported receiving at least one foot examination by a health professional in the past year. Nationwide, 67.7% of adults with diabetes reported receiving a foot examination during the past year in 2004 (7).

Quarterly Foot Examination -- It is recommended that all persons with diabetes have their feet examined at least four times annually by a health professional. In 2004, 30.7% (95% Confidence Interval 25.5%-35.9%) of adults with diabetes in New Hampshire reported at least four foot examinations by a health professional during the previous year.

In 2004, 63.0% (95% Confidence Interval 57.3%-68.6%) of adults with diabetes in New Hampshire reported checking their feet daily for sores or irritations. Twelve and one half percent of adults with diabetes in New Hampshire (95% Confidence Interval 8.6%-16.5%) reported ever having had sores or irritations on their feet that took more than four weeks to heal.

Methods: The numerator for annual foot examinations included all persons ≥18 years of age who reported being diagnosed with diabetes and who had received a foot examination during the past year. The numerator for quarterly foot examinations included all persons ≥18 years of age who reported being diagnosed with diabetes and who had received at least four foot examinations during the past year. The denominator for both measures included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers.

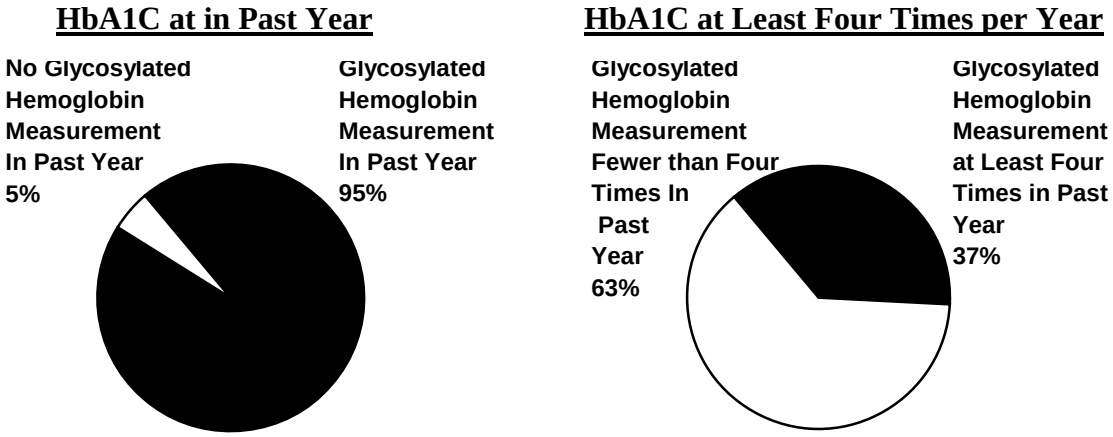
CDC National Evaluation Objective: The Division of Diabetes Translation at CDC requires monitoring the annual rate of foot examinations.

Healthy People 2010: The national *Healthy People 2010* objective (#5-14) is to increase the proportion of adults with diabetes who have at least an annual foot examination to 75%.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 7. Glycosylated Hemoglobin* Measurement among Persons with Diabetes – New Hampshire, 2004 *(Also referred to as 'Hemoglobin A1c' or HbA1C)



Comment: Annual glycosylated hemoglobin measurement -- In 2004, 94.6% (95% Confidence Interval 92.0%-97.2%) of adults with diabetes in New Hampshire reported having a glycosylated hemoglobin measurement during the past year.

Quarterly glycosylated hemoglobin measurement -- It is recommended that persons with diabetes have a glycosylated hemoglobin measurement four times annually. In 2004, 36.7% (95% Confidence Interval 30.6%-42.8%) of adults with diabetes in New Hampshire reported four or more glycosylated hemoglobin measurements during the past year.

Methods: The numerator for annual glycosylated hemoglobin measurement included all persons ≥18 years of age who reported being diagnosed with diabetes and who had at least one glycosylated hemoglobin measurement during the past year. The numerator for quarterly glycosylated hemoglobin measurement included all persons ≥18 years of age who reported being diagnosed with diabetes and who had at least four glycosylated hemoglobin measurements during the past year. The denominator for both measures included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers.

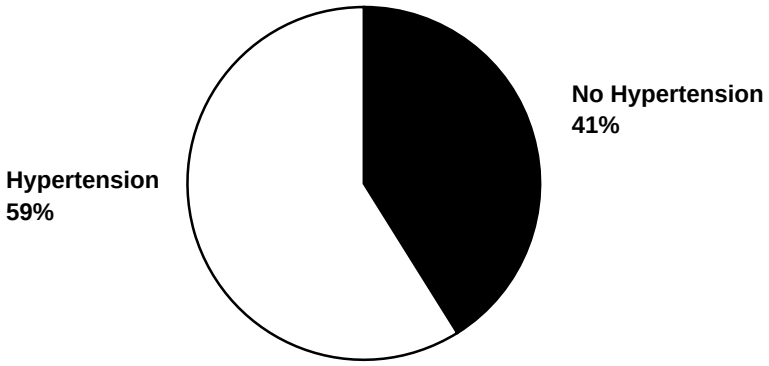
CDC National Evaluation Objective: The Division of Diabetes Translation at CDC requires monitoring the annual rate of glycosylated hemoglobin measurements.

Healthy People 2010: The national *Healthy People 2010* objective (#5-12) is to increase to 50% the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year.

Healthy New Hampshire 2010: The *Healthy New Hampshire 2010* objective is to increase to 50% the percentage of adults with diabetes who report having had a glycosylated hemoglobin measurement in the last 12 months.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 8. Hypertension among Persons with Diabetes – New Hampshire, 2003



Comment: This question is asked only once in every two years and was not asked in 2004. In 2003, 59.0% (95% Confidence Interval 53.5%-64.5%) of adults with diabetes in New Hampshire reported having hypertension compared to 20.9% (95% Confidence Interval 19.6%-22.2%) of adults without diabetes. Nationwide, 52.4% of adults with diabetes reported having hypertension in 2003 (7).

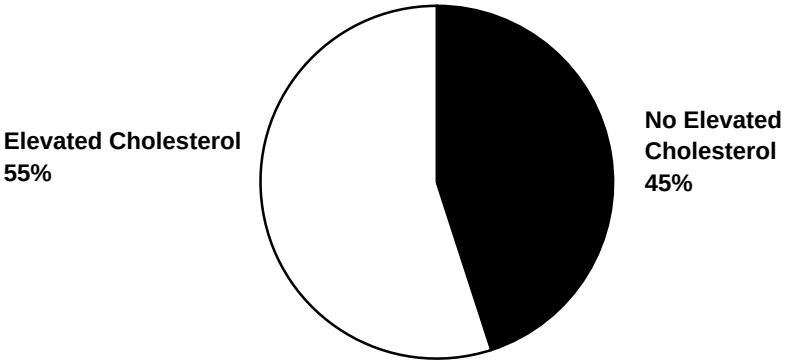
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and hypertension. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes.

Healthy People 2010: Reduce the proportion of adults with high blood pressure to 16% (#12.9). The objective is not specific to persons with diabetes.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 9. Elevated Cholesterol among Persons with Diabetes – New Hampshire, 2003



Comment: This question is asked only once in every two years and was not asked in 2004. In 2003, 55.1% (95% Confidence Interval 49.3%-60.8%) of adults with diabetes in New Hampshire reported having elevated cholesterol compared with 31.7% (95% Confidence Interval 30.3%-33.3%) of adults without diabetes. Nationwide, 50.8% of adults with diabetes reported having elevated cholesterol in 2003 (7).

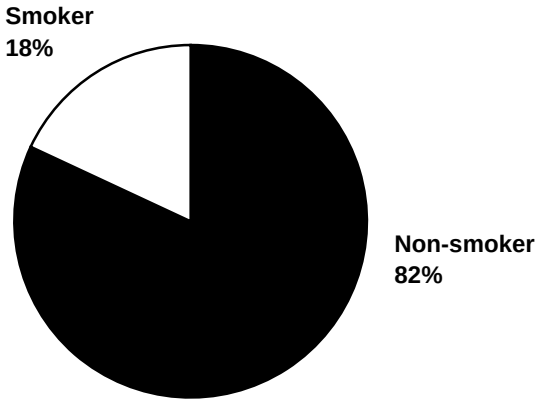
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and elevated cholesterol. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes (n=330).

Healthy People 2010: Reduce the proportion of adults with high total blood cholesterol levels to 17% (#12-14). The objective is not specific to persons with diabetes.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 10. Smoking among Persons with Diabetes – New Hampshire, 2004



Comment: In 2004, 18.3% (95% Confidence Interval 13.8%-22.9%) of adults with diabetes in New Hampshire smoked compared to 21.9% (95% Confidence Interval 20.4%-23.4%) of adults without diabetes. Nationwide, 17.7% of adults with diabetes reported smoking in 2003 (7).

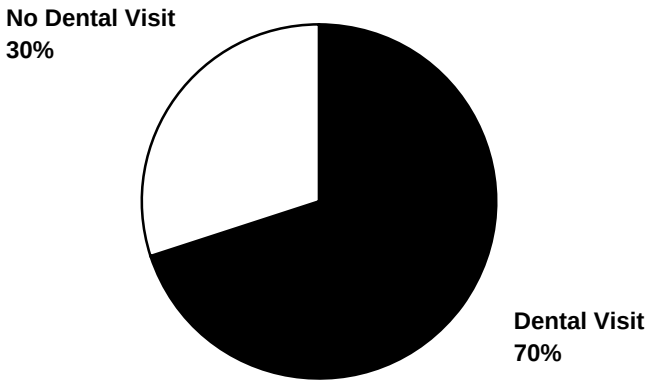
Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who were current smokers. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=380).

Healthy People 2010: The *Healthy People 2010* objective (#27-1) is to decrease smoking among adults to 12%. The objective is not specific to persons with diabetes.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 11. Dental Visit by Persons with Diabetes – New Hampshire, 2004



Comment: It is recommended that all persons with diabetes receive at least an annual dental examination. Data from 2004 indicated that 65.1% (95% Confidence Interval 59.6%-70.6%) of adults with diabetes in New Hampshire had visited a dentist or dental clinic during the previous 12 months. Among New Hampshire adults without diabetes, 76.6% (95% Confidence Interval 75.2%-78.0%) reported having visited a dentist in 2004.

Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who had visited a dentist or dental clinic during the past year. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=369).

Healthy People 2010: The *Healthy People 2010* objective (#5-15) is to increase to 75% the proportion of persons with diabetes who have an annual dental examination.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Table 6. Use of Medications by Persons with Diabetes – New Hampshire, 2004

	%	95% Confidence Interval
Oral diabetes medications with or without insulin	63.5	57.8-69.2
Insulin with or without oral diabetes medications	26.9	21.6-32.2
Oral diabetes medications only	53.0	47.2-58.8
Insulin only	16.7	11.9-21.5
Both oral diabetes medication and insulin	10.4	7.1-13.7
Neither oral diabetes medication or insulin	19.9	15.2-24.5

Comment: Data from 2004 indicated that the majority of persons with diabetes in New Hampshire used oral diabetes medications for treatment. Approximately one-quarter of adults with diabetes reported that they currently use insulin. The number of persons with diabetes who reported no treatment is of concern.

Methods: The numerator included all persons ≥18 years of age who reported being diagnosed with diabetes and who reported whether or not they took insulin and/or oral diabetes medications. The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=377).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Table 7. Management of Diabetes – New Hampshire, 2004

	%	95% Confidence Interval
Ever taken course or class in how to manage diabetes	58.9	53.2-64.6
Checked blood for glucose daily	64.2	58.7-69.7
Saw a doctor, nurse, or other health professional for diabetes at least once in past year	93.9	91.3-96.5
Saw a doctor, nurse, or other health professional for diabetes at least four times in past year	55.0	49.3-60.7

Comment: In order to adequately control their disease, adults with diabetes should have taken a course in self-management. They should also check their blood glucose at least daily and be seen regularly by their health care provider (e.g., at least quarterly). Nationwide, 53.7% of adults with diabetes had ever attended a diabetes self-management class, 59.8% self-monitored glucose daily, and 90.1% had seen a doctor for diabetes in the past year (7).

Methods: The denominator included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers.

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

Figure 12. General Health Status of Adults with and without Diabetes – New Hampshire, 2004

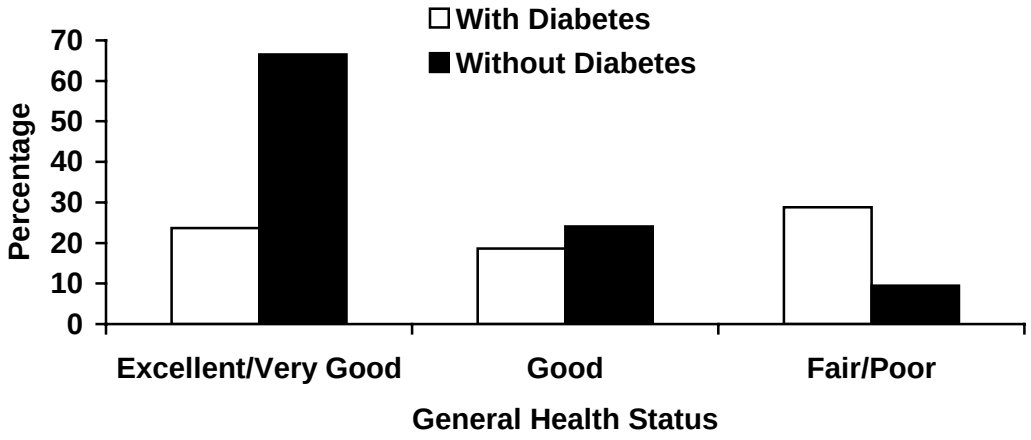


Table 8. General Health Status of Adults with and without Diabetes – New Hampshire, 2004

	Excellent/Very Good % (95% CI)	Good % (95% CI)	Fair/Poor % (95% CI)
Diabetes	23.7 (18.6-28.8)	39.5 (33.8-45.1)	36.8 (31.4-42.3)
No Diabetes	66.0 (64.4-67.6)	24.7 (23.3-26.2)	9.3 (8.4-10.2)

Comment: Adults with diabetes were significantly less likely to report excellent or very good health compared to adults without diabetes and significantly more likely to report fair or poor health.

Methods: The denominator for the general health status of adults with diabetes included all persons ≥18 years of age who reported having been diagnosed with diabetes, except those with missing, don't know, or refused answers (n=380). The denominator for the general health status of adults without diabetes included all persons ≥18 years of age who reported not having been diagnosed with diabetes or who reported being diagnosed with gestational diabetes (n=4,673).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Behavioral Risk Factor Surveillance System (6).

HOSPITAL DISCHARGE DATA

Table 9. Diabetes-related Hospitalizations – New Hampshire, 1996-2003

Year	Hospitalizations	Crude Rate (per 100,000 population)	Age-Adjusted Rate (per 100,000 population using 2000 standard US population)
1996	11,540	994.2	1,063.9
1997	12,204	1,040.2	1,108.2
1998	12,408	1,047.1	1,109.7
1999	12,770	1,063.2	1,116.4
2000	14,614	1,182.6	1,206.8
2001	15,163	1,208.7	1,227.6
2002	15,127	1,188.1	1,201.3
2003	15,948	1,235.4	1,238.1
2004	16,505	1,261.2	1,256.1

Comment: The number of diabetes-related hospitalizations has increased 38% in New Hampshire from 1996 through 2003. The age-adjusted rate for diabetes-related hospitalizations in the United States ranged from 1,466 to 1,757 per 100,000 from 1996 through 2003 (7).

Methods: Both primary and contributing diagnoses were used to determine diabetes-related hospitalizations (resident hospital discharges with ICD-9-CM 250.00-250.93).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Inpatient Hospital Discharge Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

Table 10. Diabetes-related Hospitalizations by Age Group – New Hampshire, 2003-2004

Age Group (years)	Hospitalizations		Age-Specific Rate (per 100,000 population)	
	2003	2004	2003	2004
0-4	10	12	12.9	15.3
5-14	78	86	41.7	45.8
15-24	197	216	119.6	128.7
25-34	352	378	220.1	235.1
35-44	878	945	401.0	434.8
45-54	1,756	1,850	870.0	893.4
55-64	3,133	3,249	2,462.1	2,432.7
65-74	3,874	4,131	4,846.1	5,085.9
75-84	4,201	4,190	7,958.1	7,882.6
≥85	1,469	1,448	7,124.2	6,827.6
Total	15,948	16,505	1,235.4+	1,261.2+
+ Crude rate			1,238.1++	1,256.1++
++ Age-Adjusted Rate*				

Table 11. Diabetes-Related Hospitalizations by Sex – New Hampshire, 2003-2004

Sex	Hospitalizations		Crude Rate (per 100,000 population)		Age-Adjusted Rate*	
	2003	2004	2003	2004	2003	2004
Male	7,793	8,144	1,228.8	1,266.8	1,385.6	1,414.3
Female	8,155	8,361	1,241.7	1,255.8	1,140.1	1,151.1
Total	15,948	16,505	1235.4	1,261.2	1,238.1	1,256.1

*per 100,000 population; using 2000 standard US population

Comment: The rate of diabetes-related hospitalizations increased steadily with age. The slight decline in the hospitalization rate for the oldest age group (85+) may be due to survivor bias. In other words, many individuals with diabetes will have died prior to reaching this age. Diabetes-related hospitalizations were more common among males than females.

Methods: Both primary and contributing diagnoses were used to determine diabetes-related hospitalizations (resident hospital discharges with ICD-9-CM 250.00-250.93).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Inpatient Hospital Discharge Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

Table 12. Diabetes-Related Hospitalizations by Payor – New Hampshire, 2003-2004

Payor	Hospitalizations		Percent of Total	
	2003	2004	2003	2004
Medicare	10,602	10,901	66.5	66.0
Commercial insurance	3,654	3,738	22.9	22.7
Medicaid	841	854	5.3	5.2
Self-pay	542	643	3.4	3.9
Other	309	369	1.9	2.2
Total	15,948	16,505	100.0	100.0

Comment: Medicare paid for approximately two-thirds of diabetes-related hospitalizations in New Hampshire in past two years. Altogether, government insurance paid over 70% of all diabetes-related hospitalizations in New Hampshire.

Methods: Both primary and contributing diagnoses were used to determine diabetes-related hospitalizations (resident hospital discharges with ICD-9-CM 250.00-250.93).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Inpatient Hospital Discharge Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

Table 13. Diabetes-Related Lower Extremity Amputations – New Hampshire, 1992-2004

Year	Amputations	Crude Rate (per 100,000 population)	Age-Adjusted Rate*
1992	203	18.2	20.4
1993	194	17.3	19.2
1994	225	19.9	21.8
1995	203	17.7	19.3
1996	231	19.9	21.6
1997	275	23.4	25.1
1998	291	24.6	26.2
1999	246	20.5	21.5
2000	272	22.0	22.2
2001	243	19.4	19.3
2002	258	20.3	20.1
2003	250	19.4	19.1
2004	244	18.6	18.3

*per 100,000 population using 2000 standard US population

Comment: The age-adjusted rate of diabetes-related lower extremity amputations has varied from 18.3 per 100,000 to 26.2 per 100,000 over the past 13 years in New Hampshire; there does not appear to be any consistent trend. The age-adjusted rate for the United States varied from 21 to 31 per 100,000 during the same time period (7).

Methods: Both primary and contributing diagnoses were used to determine diabetes-related amputations (resident hospital discharges with ICD-9-CM 250.00-250.93 and a procedure of ICD-9-CM 84.1, and not having a ICD-9-CM code of 895-897 [traumatic amputation]).

Healthy People 2010: Reduce the rate of lower extremity amputations in persons with diabetes to 1.8 amputations per 1,000 persons with diabetes per year.

Healthy New Hampshire 2010: No objective.

Data Source: Inpatient Hospital Discharge Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human.

Table 14. Diabetes-Related Lower Extremity Amputations by Age Group – New Hampshire, 2003-2004

Age Group (years)	Amputations		Age-Specific Rate (per 100,000 population)	
	2003	2004	2003	2004
0-34	3	1	--	--
35-44	14	11	6.4	5.1
45-54	37	42	18.3	20.3
55-64	62	53	48.7	39.7
65-74	65	70	81.3	86.2
75-84	58	53	109.9	99.7
≥85	11	14	53.3	66.0
Total	250	244	19.4 +	18.6 +
+ Crude Rate			19.1 ++	18.3 ++
++ Age-Adjusted Rate*				

Table 15. Diabetes-Related Lower Extremity Amputations by Sex – New Hampshire, 2003-2004

Sex	Amputations		Crude Rate (per 100,000 population)		Age-Adjusted Rate*	
	2003	2004	2003	2004	2003	2004
Male	155	169	24.4	26.3	26.1	29.1
Female	95	75	14.5	11.3	13.4	10.3
Total	250	244	19.4	18.6	19.1	18.3

***** per 100,000 population using 2000 standard US population

Table 16. Diabetes-Related Lower Extremity Amputations by Payor – New Hampshire, 2003-2004

Payor	Amputations		Percent	
	2003	2004	2003	2004
Medicare	171	165	68.4	67.6
Commercial insurance	58	53	23.2	21.7
Medicaid	12	12	4.8	4.9
Self-pay	7	10	2.8	4.1
Other	2	4	0.8	1.6
Total	250	244	100	100

Comment: Amputations of the lower extremity are more common as people age and among males. Medicare paid for approximately 68% of diabetes-related lower extremity amputations. Altogether, government insurance paid for 73% of diabetes-related lower extremity amputations in New Hampshire in past two years.

Methods: Both primary and contributing diagnoses were used to determine diabetes-related amputations (resident hospital discharges with ICD-9-CM 250.00-250.93 and a procedure of ICD-9-CM 84.1, and not having a ICD-9-CM code of 895-897 [traumatic

amputation]). Rates were not calculated in Table 14 if the number of events per age group was less than 10.

Healthy People 2010: Reduce the rate of lower extremity amputations in persons with diabetes to 1.8 amputations per 1,000 persons with diabetes per year.

Healthy New Hampshire 2010: No objective.

Data Source: Inpatient Hospital Discharge Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

U.S. RENAL DATA SYSTEM

Figure 13. Incidence rate of end stage renal disease attributed to diabetes by year – New Hampshire, 1994-2003

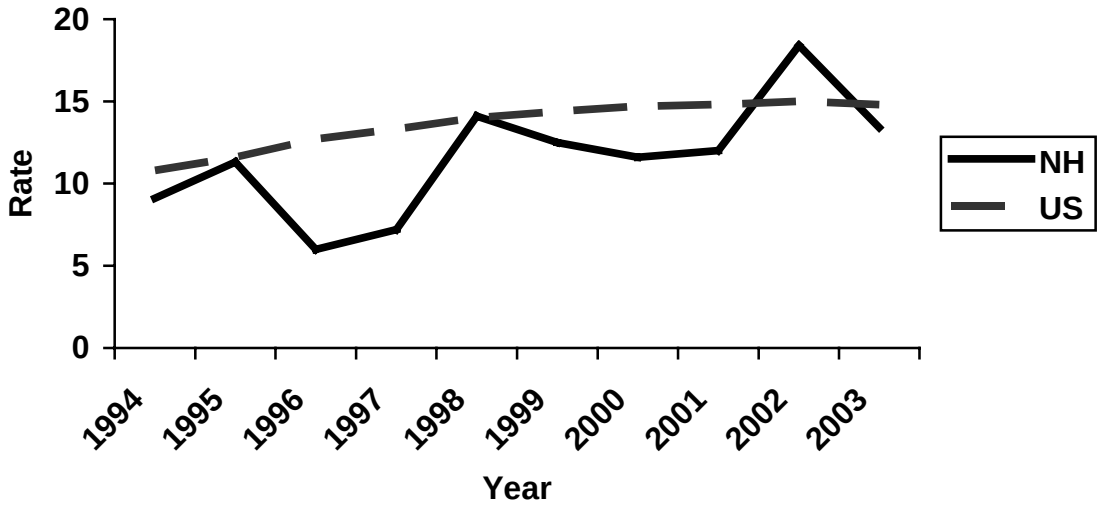


Table 17. Incident cases and rates* of end stage renal disease attributed to diabetes by year – New Hampshire and United States, 1994-2003

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
NH cases	55	71	59	77	82	96	103	88	108	106
NH rate	9.1	11.3	6.0	7.2	14.1	12.5	11.6	12.0	18.4	13.4
US rate	10.8	11.6	12.7	13.3	14.0	14.4	14.7	14.8	15.0	14.8

***** per 100,000 population

Comment: The number of persons in New Hampshire reported with end stage renal disease attributed to diabetes increased from 55 in 1994 to 106 in 2003; an increase of 100%.

Methods: The US Renal Data System is funded by the National Institutes of Health and the Centers for Medicare and Medicaid Services to monitor the incidence of end stage renal disease using a variety of data sources. Rates are adjusted by age, sex, and race.

Healthy People 2010: Reduce kidney failure due to diabetes (#4.7) to 78 new cases of end stage renal disease in persons with diabetes per 1,000,000 persons per year.

Healthy New Hampshire 2010: No objective.

Data Source: United States Renal Data System (8).

Table 18. Diabetes-Related Mortality by Year – New Hampshire, 1990-2001

Year	Deaths	Crude Death Rate (per 100,000 population)	Age-Adjusted Death Rate (per 100,000 population using 2000 standard US population)
1990	697	62.7	72.8
1991	712	64.3	73.6
1992	767	68.9	77.3
1993	745	66.4	73.8
1994	771	68.0	75.1
1995	796	69.5	75.7
1996	851	73.3	79.4
1997	893	76.1	81.8
1998	892	75.3	80.2
1999	977	81.3	86.0
2000	967	78.2	81.7
2001	963	76.8	79.4

Comment: The increase in the crude diabetes death rate in New Hampshire may be due to an increasing prevalence of diabetes and an aging population.

Methods: Both underlying and contributing causes of death were used to determine diabetes-related mortality (ICD-9 code of 250.0-250.9; ICD-10 code of E10.0-E14.9).

Healthy People 2010: The national *Healthy People 2010* objective (#5-5) is to decrease age-adjusted diabetes-related mortality to 45 deaths per 100,000 persons.

Healthy New Hampshire 2010: No objective.

Data Source: Mortality Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

Table 19. Diabetes-Related Mortality by Age Group – New Hampshire, 2001

Age Group (years)	Deaths	Age-Specific Death Rate (per 100,000 population)
0-24	0	---
25-34	3	---
35-44	21	9.5
45-54	51	26.8
55-64	108	93.7
65-74	231	294.3
75-84	344	662.6
≥85	205	1071.5
Total	963	76.8 +
+ Crude Rate		79.4 ++
++ Age-Adjusted Rate		

Table 20. Diabetes-Related Mortality by Sex – New Hampshire, 2001

Sex	Deaths	Crude Rate (per 100,000 population)	Age-Adjusted Death Rate (per 100,000 population using 2000 standard US population)
Male	493	80.0	100.7
Female	470	73.7	65.0
Total	963	76.8	79.4

Comment: The diabetes-related death rate increases with increasing age. The diabetes-related death rate was significantly higher for males than females.

Methods: Both underlying and contributing causes of death were used to determine diabetes-related mortality (ICD-9 code of 250.0-250.9; ICD-10 code of E10.0-E14.9). Rates were not calculated in Table 19 if the number of events per age group was less than 20.

Healthy People 2010: The national *Healthy People 2010* objective (#5-5) is to decrease age-adjusted diabetes-related mortality to 45 deaths per 100,000 persons.

Healthy New Hampshire 2010: No objective.

Data Source: Mortality Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

Table 21. Diabetes Ketoacidosis-Related Mortality – New Hampshire, 1990-2001

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Deaths	11	8	13	5	9	9	9	6	8	1	7	9

Comment: The number of deaths from diabetic ketoacidosis in New Hampshire is too small for meaningful analysis.

Methods: Both underlying and contributing causes of death were used to determine diabetic ketoacidosis-related mortality (ICD-9 code 250.1; ICD-10 code E10.1, E11.1, E12.1, E13.1, or E14.1).

Healthy People 2010: No objective.

Healthy New Hampshire 2010: No objective.

Data Source: Mortality Data Set, Health Statistics and Data Management Section, Bureau of Disease Control and Health Statistics, Division of Public Health Services, New Hampshire Department of Health and Human Services.

DIABETES PRIMARY CARE SITES

Table 22. Receipt of Clinical Prevention Practices for Adults with Diabetes at Participating Clinic Sites – New Hampshire, 2005

Clinical Prevention Practice	%
Influenza vaccine in past year	39
History of pneumococcal vaccine	48
Dilated eye exam in past year	35
Foot exam in past 3 months	24
Foot exam in past year	51
Glycosylated hemoglobin test in past 3 months	49
Two glycosylated hemoglobin test in past year	68
Most recent glycosylated hemoglobin test <7.0	50
Aspirin therapy	60
Micro albumin in past year	54
LDL cholesterol in past year	71
LDL <100 mg/dL	54
Diabetes education in past year	58
Current tobacco use	27
Tobacco cessation recommend in past year among current tobacco users	56
Self-management goal discussion noted in chart	55
ACE/ARB prescribed for patients over 55	56
BMI calculated and noted in chart	26
Blood pressure at or below goal 130/80	40

Comment: Data from the fifteen clinic sites should be compared to statewide results from the Behavioral Risk Factor Surveillance System (BRFSS) with caution. Information from the clinic sites was based on medical records whereas the BRFSS data were obtained from a telephone survey of adult respondents. As an example, dilated eye examinations may be poorly documented in a patient's primary care medical chart, but readily acknowledged by self-report through a telephone interview. Patients seen in community health centers may also be of lower socio-economic status than the general population and therefore less likely to receive the indicated preventive services due to financial and other constraints.

Methods: Fifteen clinic sites participated in the diabetes chart audits for calendar year 2005: Ammonoosuc Community Health Services (Littleton), Avis Goodwin Community Health Center (Dover and Rochester), Coos County Family Health Services (Berlin), Families First Health and Support Center (Portsmouth), Health First Family Care Center (Franklin), Lamprey Health Care (Newmarket and Raymond), Manchester Community Health Center (Manchester), Nashua Area Health Center, Partners in Health (Newport), and Weeks Medical Center (Lancaster). These fifteen sites had a total of 6,456 adults with diabetes. Records were abstracted for 4,823 patients. All charts were reviewed at 11 clinics. A sample of charts was reviewed at Newport, New London, Weeks and White Mountain Clinics.

Healthy People 2010: Multiple objectives. Please see pages 9-21.

Healthy New Hampshire 2010: Immunize 80% of independently living adults age 50 or over against influenza. Immunize 90% of independently living adults age 65 or over against pneumococcal disease. Increase to 80% the percentage of adults with diabetes who report having a dilated eye exam in the last 12 months. Increase to 50% the percentage of adults with diabetes who report having had a glycosylated hemoglobin measurement in the last 12 months.

Data Source: Community Health Access Network and New Hampshire Diabetes Education Program.

REACH 2010 Risk Factor Survey

What is the Reach 2010 Risk Factor Survey?

The Reach 2010 Risk Factor Survey provides information specifically on the health risks, health status, and health care for minority populations, which previously has not been widely available in the United States. Especially in states like New Hampshire, which has a small percentage of minority citizens, it is difficult to draw useful conclusions about the health of minority groups from other data sources.

New Hampshire's primary source of population-based health data is the national Behavioral Risk Factor Surveillance Survey (BRFSS), which is used extensively in this *NH Diabetes Data* booklet. However, the BRFSS does not differentiate respondents by race or ethnicity, so the health statistics for minority groups cannot be separated from those of the overall population.

The Reach 2010 survey includes a bigger number of respondents from minority groups, creating a more accurate picture of how the health risks, health status, and health needs of minority groups may vary from those of the predominant white population.

Survey Methodology

Recognizing the need for accurate data on the health of minority groups to plan and supply appropriate health services, the Centers for Disease Control designed the Reach 2010 Risk Factor Survey to complement the BRFSS. CDC contracted with the National Opinion Research Center (NORC) to conduct household surveys in 27 communities across the country that participate in its Racial and Ethnic Approaches to Community Health (REACH) program.

The NH REACH 2010 Risk Factor Survey focuses on African Descendents and Latinos from Hillsborough county, since those are the two target populations for the New Hampshire REACH 2010 program. To target the minority populations of interest, NORC sampled from selected census blocks with high densities of African descendents and/or Latinos in Hillsborough County.

The REACH survey asks questions similar to the BRFSS, and is typically conducted by a random digit dialing telephone survey. Based on the 2000 Census, an estimated 96 percent of African Descendent and Latino residents have home telephones. Therefore, the NH survey was conducted via telephone interviews, which were conducted from April 2003 through January 2004 with 218 African descendents and 635 Latinos.

To make this sample representative of the two target populations in the county, the data are weighted according to the probability of being selected into the sample. Sampling weights are designed to allow for estimates of African descendent and Latino residents of Hillsborough County.

Limitations of the Data

The REACH 2010 Risk Factor survey objective is to interview 1,000 people, typically by telephone, from each REACH community each year. This sample is the largest that could be obtained given current resource constraints. Due to its smaller sample size, estimates from the weighted REACH survey data yield larger confidence intervals than are derived from the BRFSS.

Findings

The findings presented on the following pages highlight the most striking differences found between the African Descendents and Latinos from Hillsborough County in the REACH survey and state residents overall from the BRFSS. The BRFSS sample reported on the following pages was predominantly white: of the total sample of 5,017 New Hampshire residents sampled in the 2004 BRFSS, there were 4,774 whites, 23 blacks, 70 Hispanics, and 150 persons of other races.

Figure 14. Prevalence estimates of overweight and obesity among African Descendents and Latinos in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2004.

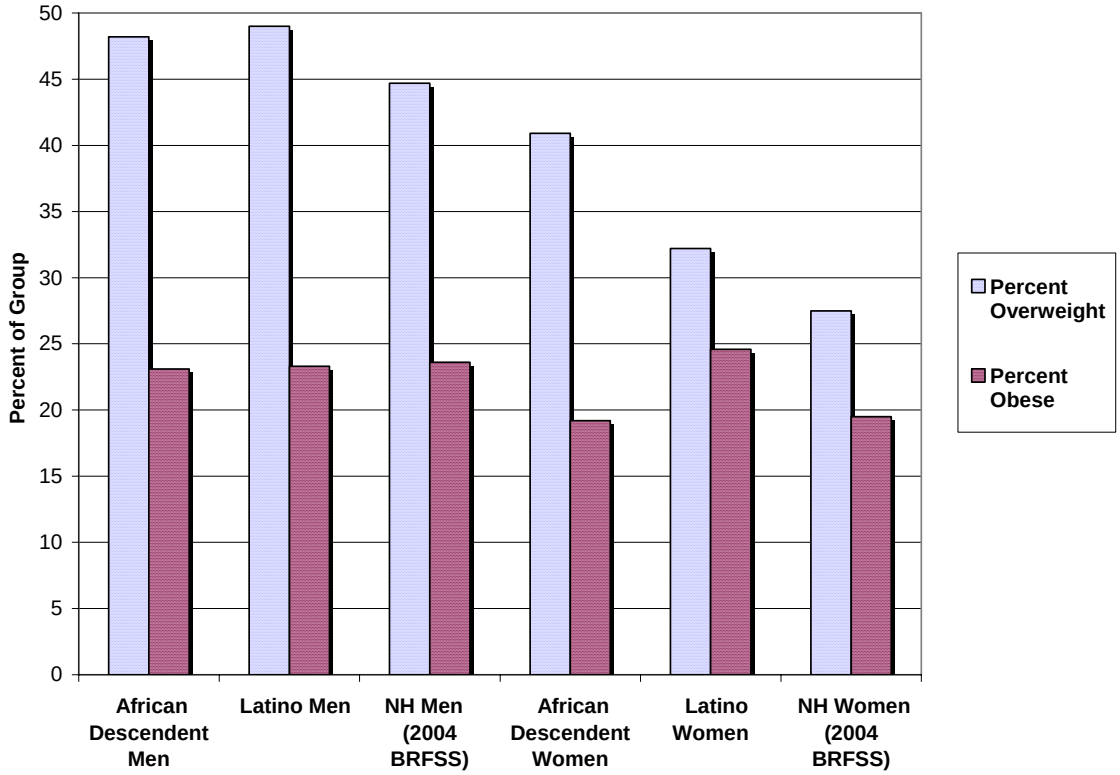


Table 23. Prevalence estimates of overweight and obesity among African Descendents and Latinos in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2004.

Demographic Group	Sample Size	Percent Overweight	95% Conf. Interval	Percent Obese	95% Conf. Interval
African Descendents					
Men	101	48.2	36.4-60.2	23.1	14.0-35.6
Women	85	40.9	29.5-53.4	19.2	12.6-28.2
Latinos					
Men	258	49.0	42.0-56.1	23.3	17.2-30.9
Women	364	32.2	26.6-38.2	24.6	19.5-30.5
New Hampshire (2004)					
Men	2084	44.7	42.2-47.2	23.6	21.5-25.7
Women	2739	27.5	25.6-29.4	19.5	17.8-21.3

Comment: Clearly, obesity is a problem among all demographic groups in New Hampshire. This presents a challenge to all of us in the state to focus resources on reducing this risk factor for diabetes and many other chronic conditions. In the African Descendent and Latino communities of Hillsborough County, the percentages of overweight or obese men are comparable to estimates for men in general from the state BRFSS. However, in both communities, the percentage of overweight or obese women is higher than it is among women in New Hampshire overall. There are likely to be multiple factors contributing to these differences including cultural and economic issues. In that African Descendents and Latinos also have other risk factors for developing diabetes (i.e. physical inactivity, as demonstrated below), reducing overweight and obesity among them can be an important opportunity to prevent diabetes in these communities.

Methods: Body Mass Index (BMI) is calculated as self-reported weight in kilograms divided by self-reported height in meters squared. Overweight is defined as a BMI=25.0 to 29.9, while Obese is defined as a BMI $\geq$ 30.

Data Source: REACH 2010 Risk Factor Survey in Hillsborough County, New Hampshire, 2004. Behavioral Risk Factor Surveillance System, 2004. Survey data. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. New Hampshire Behavioral Risk Factor Surveillance System data provided by the New Hampshire Department of Health and Human Services, Health Statistics and Data Management Section.

Figure 15. Prevalence estimates of physical inactivity among African Descendents and Latinos in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2003*.

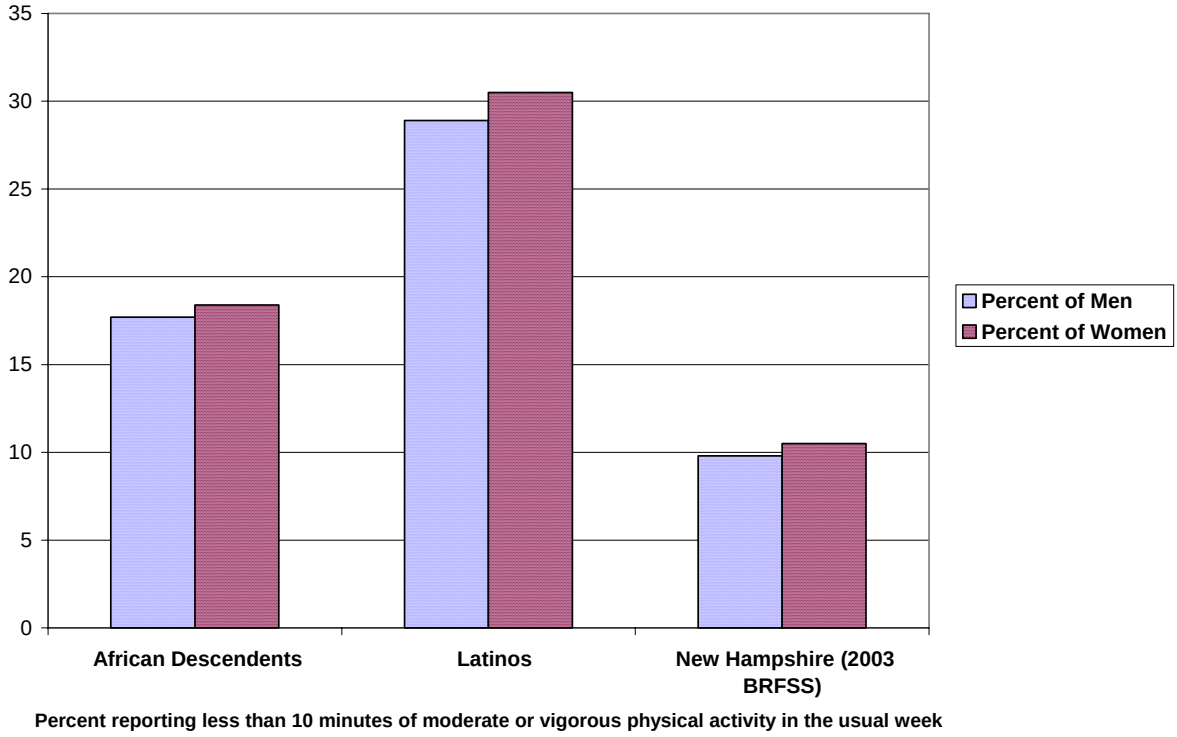


Table 24. Prevalence estimates of physical inactivity among African Descendents and Latinos in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2003.

Demographic Group	Sample Size	Percent less than 10 minutes of physical activity, at a time, in a usual week	95% Conf. Interval
African Descendents			
Men	102	17.7	10.9-27.4
Women	90	18.4	11.4-28.3
Latinos			
Men	291	28.9	23.0-35.7
Women	432	30.5	25.5-36.2
New Hampshire (2003)			
Men	2038	9.8	8.5-11.4
Women	2930	10.5	9.3-11.8

Comment: In addition to obesity, lack of physical activity is another important risk factor for developing diabetes. A significantly higher percentage of African Descendent and Latino residents from Hillsborough county reported doing less than 10 minutes at a time of moderate or vigorous physical activities in the usual week when compared with the predominantly white population of NH. Community leaders suggest that many people in their communities simply have no time for exercise because they have two or three jobs in order to support their families. Others point to the cost of memberships in fitness clubs and the weather as barriers to physical activity for people in their communities.

Methods: Those reporting no physical activity told the interviewer they did not do at least 10 minutes, at a time, of moderate activity (such as brisk walking, bicycling, vacuuming, or gardening), nor of vigorous activity (such as running or aerobics) in a usual week. *This question was not asked in the BRFSS survey in 2004, therefore, 2003 BRFSS data were used.

Data Source: REACH 2010 Risk Factor Survey in Hillsborough County, New Hampshire, 2004. Behavioral Risk Factor Surveillance System, 2003. Survey data. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. New Hampshire Behavioral Risk Factor Surveillance System data provided by the New Hampshire Department of Health and Human Services, Health Statistics and Data Management Section.

Figure 16. Prevalence estimates of diabetes among African Descendents and Latinos in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for white residents of the state of New Hampshire, 2004.

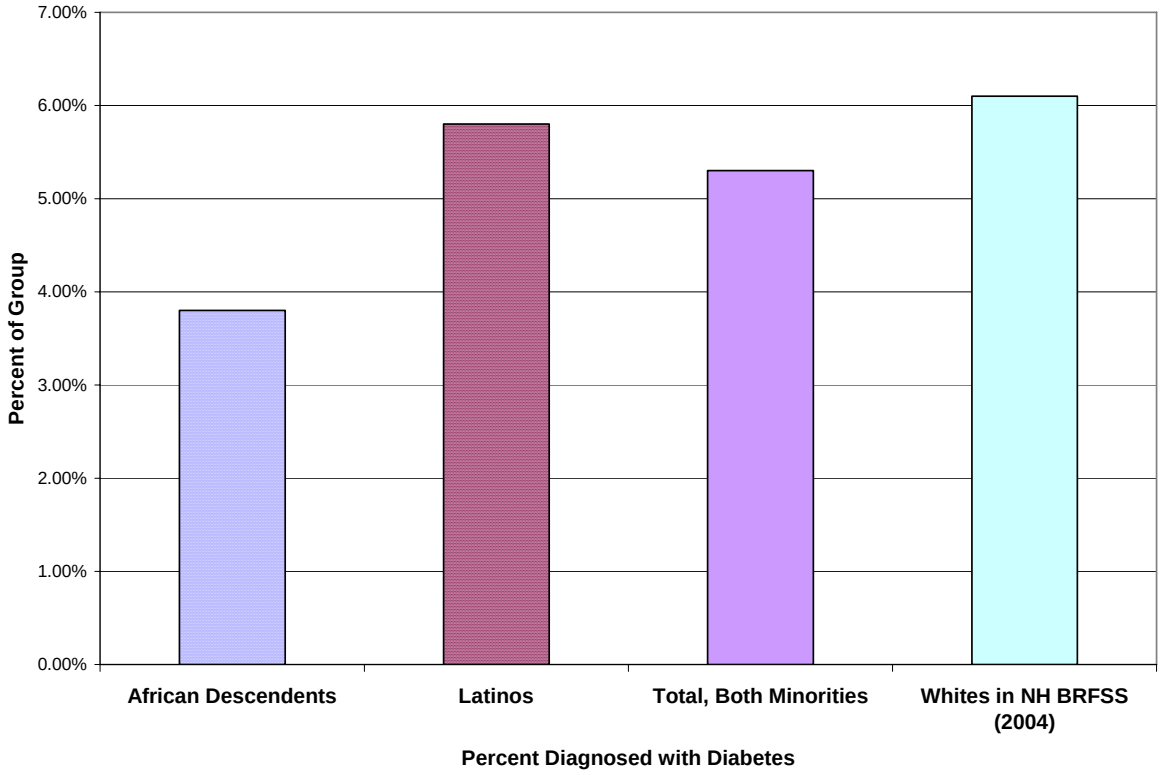


Table 25. Prevalence of Diabetes among African Descendents and Latinos in Hillsborough County New Hampshire, 2004.

Demographic Group	Sample Size	Percent (n) Diagnosed with Diabetes	95% Conf. Interval
African Descendents	196	3.8% (11)	2.2-6.4
Latinos	734	5.8% (44)	4.2-8.0
Total, Both Minorities	930	5.3% (55)	4.0-7.1
New Hampshire Whites (2004)	4773	6.1% (381)	5.4-6.8

Comment: As found in the REACH 2010 Risk Factor Survey and the BRFSS, it appears that the prevalence of diabetes among Hillsborough County's African Descendent and Latino populations is comparable to the diabetes prevalence rate of 5.5% for whites in New Hampshire. However, the average age of people in these two communities is much younger than New Hampshire in general. Two-thirds of the African Descendents and Latinos surveyed from Hillsborough county are between the ages of 18 and 39. In New Hampshire in general, nearly two-thirds of the population is over the age of 39. Rates of diabetes go up significantly after the age of 40, so the prevalence of diabetes in these minority populations is likely to rise significantly over the next 10 years. This presents a tremendous opportunity for preventing diabetes among African Descendents and Latinos in New Hampshire. Resources focused on reducing risk factors in these younger communities and in the children they are currently raising will likely supply sizable dividends in less diabetes and lower health care costs in the future.

Data Source: REACH 2010 Risk Factor Survey in Hillsborough County, New Hampshire, 2004. Behavioral Risk Factor Surveillance System, 2004. Survey data. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. New Hampshire Behavioral Risk Factor Surveillance System data provided by the New Hampshire Department of Health and Human Services, Health Statistics and Data Management Section.

Figure 17. Prevalence estimates of preventive monitoring among Latinos with diabetes, and along with African Descendents with diabetes, in Hillsborough County New Hampshire, 2004 compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2004.

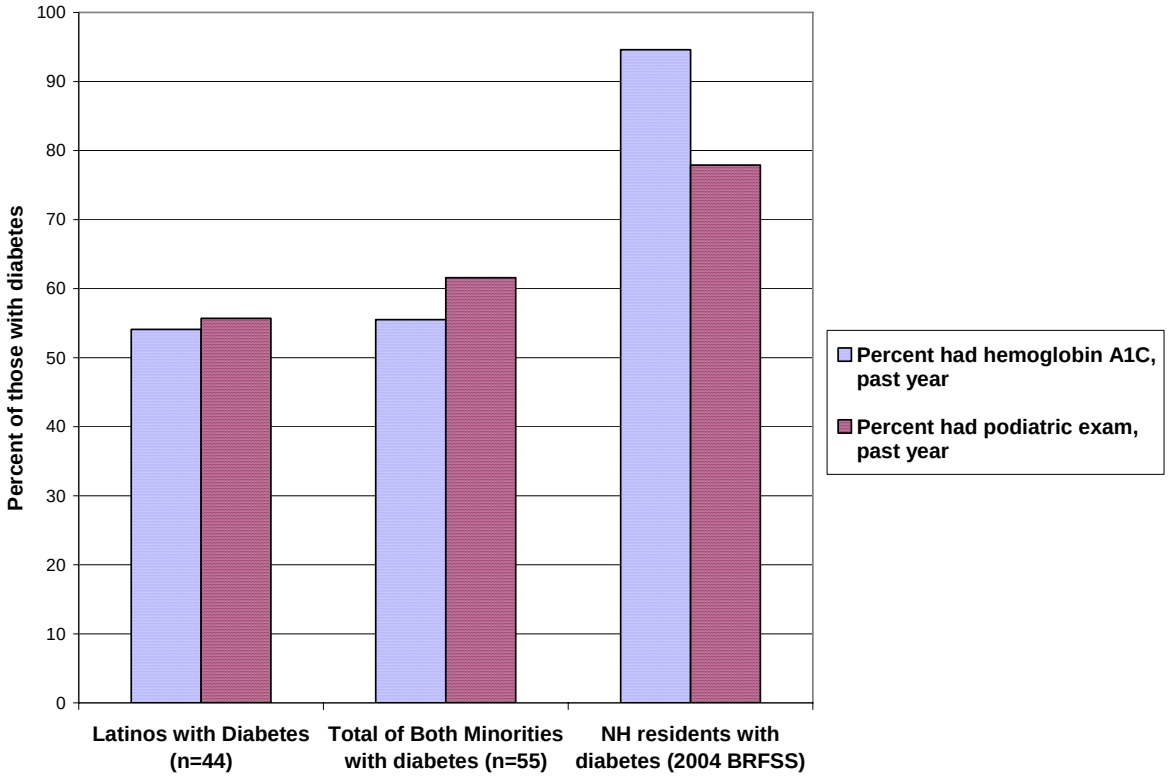


Table 26. Prevalence estimates of preventive monitoring among African Descendents and Latinos with Diabetes in Hillsborough County New Hampshire, 2004, compared with prevalence estimates from the BRFSS for the state of New Hampshire, 2004.

Demographic Group (Number of cases vary due to missing values)	Of those with diabetes, percent had Hemoglobin A1C test	95% Conf. Interval	Of those with Diabetes, Percent Had Podiatric Exam	95% Conf. Interval
African Descendents with Diabetes (n=11)	[Number of African descendents surveyed with diabetes was too small for reliable estimates]			
Latinos with Diabetes (n=43-44)	54.1	37.2-70.1	55.7	38.3-71.8
Total of Both Minorities with diabetes (n=54-55)	55.5	40.5-69.6	61.6	45.7-75.4
New Hampshire, 2004 Residents with diabetes	94.6 (n=312)	92.0-97.2	77.9 (n=374)	72.9-82.9

Comment: Here, for the first time, data clearly show what is seen in the rest of the United States: a clear disparity in health *care* among New Hampshire's minority populations. Among African Descendents, the number of individuals in the sample who have been diagnosed with diabetes was too small for accurate estimates of clinical care being received. Among Latinos, however, the rates of Hemoglobin A1c testing are significantly lower than those for New Hampshire overall. Of equal concern is the low rate of foot exams. Not only is an annual foot exam the standard for diabetes care, but it is important in preventing expensive complications. It is critical that New Hampshire address these disparities especially since the prevalence (and cost) of diabetes is likely to rise as people in these minority communities age.

Data Source: REACH 2010 Risk Factor Survey in Hillsborough County, New Hampshire, 2004. Behavioral Risk Factor Surveillance System, 2004. Survey data. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. New Hampshire Behavioral Risk Factor Surveillance System data provided by the New Hampshire Department of Health and Human Services, Health Statistics and Data Management Section.

CONCLUSIONS

In 2004, 6.5% of adults in New Hampshire reported being diagnosed with diabetes. The prevalence of diabetes increases with increasing age. Three factors are likely to contribute to an increasing prevalence of diabetes in New Hampshire. First, many adults in the state are overweight. Second, fewer adults are physically active. Third, the state's population is becoming older.

Primary prevention for diabetes consists of maintaining appropriate body weight, good nutrition, and adequate amounts of physical activity. Secondary and tertiary prevention consist of good glucose control and interventions such as immunizations and foot and eye examinations. The data in this report indicate that these types of clinical interventions are underutilized. The morbidity and mortality associated with diabetes could be decreased if all persons with the disease received the recommended clinical preventive services.

CONTRIBUTORS

Kathleen Berman

Kimberly Grace

Susan Knight

David Swenson

Elizabeth Traore

REFERENCES

1. Centers for Disease Control and Prevention. Diabetes: disabling, deadly, and on the rise -- 2002. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2002.

2. Lengerich EJ (ed). Indicators for chronic disease surveillance: consensus of CSTE, ASTCDPD, and CDC. Atlanta, GA: Council of State and Territorial Epidemiologists, November 1999.

3. Lengerich EJ (ed). Indicators for chronic disease surveillance: consensus of CSTE, ASTCDPD, and CDC, data volume. Atlanta, GA: Council of State and Territorial Epidemiologists, June 2000.

4. US Department of Health and Human Services. Healthy People 2010 (conference ed, 2 vols). Washington, DC: US Department of Health and Human Services, 2000. Available at: www.healthypeople.gov

5. New Hampshire Department of Health and Human Services. Healthy New Hampshire 2010. Concord, NH: New Hampshire Department of Health and Human Services, 2001. Available at: www.dhhs.state.nh.us/DHHS/DPHS/healthy+new+hampshire+2010.htm

6. Behavioral Risk Factor Surveillance System, 2004. Survey data. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, US Department of Health and Human Services. Available at: www.cdc.gov/BRFSS/ New Hampshire Behavioral Risk Factor Surveillance System data provided by the New Hampshire Department of Health and Human Services, Health Statistics and Data Management Section.

7. Diabetes surveillance system: data and trends. Centers for Disease Control and Prevention. Available at: http://www.cdc.gov/diabetes/statistics

8. U.S. Renal Data System, USRDS 2005 Annual Data Report: Atlas of End-Stage Renal Disease in the United States, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2005. Available at: http://www.usrds.org/

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM QUESTIONS

Diabetes

Have you ever been told by a doctor that you have diabetes?
If "Yes" and respondent is female, ask: "Was this only when you were pregnant?"
If Respondent says pre-diabetes or borderline diabetes, use response code 4.
1 Yes
2 Yes, but female told only during pregnancy
3 No
4 No, pre-diabetes or borderline diabetes
7 Don't know / Not sure
9 Refused

When was the last time you had an eye exam in which the pupils were dilated? This would have made you temporarily sensitive to bright light.
1=Within the past month
2=Within the past year
3=Within the past 2 years
4=2 or more years ago
8=Never
7=Don't know/Not sure
9=Refused

Has a doctor ever told you that diabetes has affected your eyes or that you had retinopathy?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

About how many times in the past 12 months has a health professional checked your feet for any sores or irritations?
__ __=Number of times
88=None
77=Don't know/Not sure
99=Refused

About how often do you check your feet for any sores or irritations? (Include times when checked by a family member or friend, but do not include times when checked by a health professional.)
1=__ __ Times per day
2=__ __ Times per week
3=__ __ Times per month
4=__ __ Times per year
888=Never
555=No feet
777=Don't know/Not sure
999=Refused

Have you ever had any sores or irritations on your feet that took more than four weeks to heal?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

A test for hemoglobin "A one C" measures the average level of blood sugar over the past three months. About how many times in the last year has a doctor, nurse, or other health professional checked you for hemoglobin "A one C"?
__ __=Number of times
88=None
98=Never heard of hemoglobin "A one C" test
77=Don't know/Not sure
99=Refused

Are you now taking diabetes pills?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Are you now taking insulin?
1=Yes
2=No
9=Refused

Have you ever taken a course or class in how to manage your diabetes yourself?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

About how often do you check your blood for glucose or sugar? Include times when checked by a family member or friend, but do not include times when checked by a health professional.
1__ __ Times per day
2__ __ Times per week
3__ __ Times per month
4__ __ Times per year
888=Never
777=Don't know/Not sure
999=Refused

About how many times in the past 12 months have you seen a doctor, nurse, or other health professional for your diabetes?
__ __=Number of times
88=None
77=Don't know/Not sure
99=Refused

How old were you when you were told you have diabetes?
__ __=Age in years
77=Don't know/Not sure
99=Refused

Body Mass Index

About how much do you weigh without shoes?
__ __ __=Weight (pounds)
777=Don't know/Not sure
999=Refused
About how tall are you without shoes?
__/__ __=Height (ft/inches)
777=Don't know/Not sure
999=Refused

Leisure-time Physical Activity

During the past month, other than your regular job, did you participate in any physical activities or exercise such as running, calisthenics, golf, gardening, or walking for exercise?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Influenza Immunization

During the past 12 months, have you had a flu shot?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Pneumococcal Immunization

Have you ever had a pneumonia shot? This shot is usually given only once or twice in a person's lifetime and is different from the flu shot. It is called the pneumococcal vaccine.
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Hypertension

Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Elevated Cholesterol

Have you every been told by a doctor, nurse, or other health professional that your blood cholesterol is high?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Smoking

Have you smoked at least 100 cigarettes in your entire life?
1=Yes
2=No
7=Don't know/Not sure
9=Refused

Do you now smoke cigarettes everyday, some days, or not at all?
1 Every day
2 Some days
3 Not at all
9 Refused

Oral Health

How long has it been since you last visited the dentist or a dental clinic for any reason?
1=Within the past year
2-Within the past 2 years
3=Within the past 5 years
4=5 or more years ago
7=Don't know/Not sure
8=Never
9=Refused

General Health Status

Would you say that in general your health is:
1=Excellent
2=Very good
3=Good
4=Fair
5=Poor
7=Don't know/Not sure
9=Refused